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THE
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THE PSYCHOLOGY OF HUMAN LEARNING: A BIBLIOGRAPHY

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INTRODUCTION

The following list of books and papers is intended to be representative of the experimental and theoretical research upon the problems of human learning. An exhaustive bibliography of this widely branched field of investigation would embrace many more than the titles which are given. Exhaustiveness is, however, impossible in the available space and, from a much larger number, covering the period from the work of Ebbinghaus to and including 1930, 1,200 titles have been selected. In their selection certain criteria have been applied, namely: (1) significance for the concept of learning as such; (2) a primary concern with learning in this sense; (3) representative character; and (4) availability. A large number of papers and books upon closely related topics are excluded by these criteria and the intended boundaries will be made clearer by an enumeration of some of the excluded topics. The extensive publications upon such problems as the learning of school subjects, industrial training, and how to study, are not directly concerned with learning as such, but rather with the application of knowledge about learning to special content or with the discovery of facts for technical purposes. Only a few papers, selected on the basis of their implications beyond the special interests of subject matter, have been included from these fields. Textbooks in general, educational, and child psychology are excluded by the second criterion. Some of these books report new data or offer new interpretations, but their major concern is not with learning. Such books are, also, more generally known and more readily accessible than are individual papers or books upon a special topic.

References to some of the books not devoted primarily to learning but containing important sections upon it may be found in the reviews of the literature which have appeared during the last ten years in the PSYCHOLOGICAL BULLETIN. The fourth criterion has led to the omission of papers published in journals which are infrequently found in American libraries and of privately or locally published doctoral dissertations. Abstracts of papers read at meetings and congresses or communicated to academies and societies have been omitted.

A number of borderline topics have been excluded by joint reason of the volume of work done upon them and of the present limited space. Association and the conditioned response are chief among these. Only when papers on these problems aim directly at an interpretation of learning have they been cited. The voluminous work upon *Aussage-psychologie,* although it lies clearly within the purview of learning, was done more with an eye to practical problems than to an understanding of learning. Omitted, likewise, are the titles upon the theoretically fascinating field of abnormalities of memory. They interpenetrate too greatly the problems of abnormal psychology to warrant adequate inclusion. Under somewhat incidental problems, moreover, only a few representative titles have been cited.

The titles are classified according to the problems with which they most clearly have to do. Many papers bear upon more than one problem and cross references are added to representative titles which have been cited under other headings. The cross references are to titles by number only and appear after the last title under a topic. Books and general summaries, since many of them deal with a wide range of problems, have not been cited in the cross references.

Decision whether titles should be listed under *learning* or under *retention* has sometimes been difficult and in questionable cases the policy of placing them under learning has been followed. In a few instances, where but a single paper has been published upon a problem in retention, in order to avoid too numerous subdivisions, that paper has been listed under its problem in learning. The classification of papers has been made from critical abstracts of each one. It is a pleasure to acknowledge my indebtedness to Professor Harvey A. Carr, who has supplied abstracts of a considerable number of titles. Upon the classification of all of the titles it is too much to hope that all psychologists will agree. It can only be hoped that agreement will be sufficient to render the bibliography useful.

The following list of the problems or topics under which the

titles have been classified gives the topics in the order in which they appear in the bibliography.

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Sex Differences, 1147–1149.
Theories of Forgetting, 1150–1158.
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The Whole-Part Problem and Retention

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AN ATTEMPT AT A RATING SCALE FOR PSYCHOLOGISTS

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Though children, college students, laymen, and others have long been subjected to the humiliating process of being rated by means of rating scales, the psychologists, who are probably chiefly responsible for such ratings, have perhaps considered themselves above such things. But now that surveys are being made of the training, experience, publications, etc., of psychologists, might it not be appropriate to make an attempt to evaluate the whole psychologist?

Such evaluation by means of ratings would seem to have little reliability, yet it would seem possible to arrive at a somewhat objective score by weighting the various factors which enter into the whole psychologist and by making up a composite score from these weighted factors. It seems probable that such a score would have considerably greater reliability than a simple subjective judgment passed on the basis of a general impression.

One might perhaps hesitate to use such a scale administratively for the purpose of employing instructors or of determining salaries, but it is our hope that it might be useful and of interest in some other ways.

In the first place, it is of interest as a summary of the expression of opinions by established psychologists regarding the importance of the various factors which enter into the making of the proficient psychologist.

Furthermore, it might be used in comparing the personnel of departments of psychology in different institutions or to compare the average ratings of psychologists in two or more states, or to compare the membership of one psychological organization with that of another.

Perhaps one of the chief values of the scale would be that the younger coming psychologist would be able to gain some definite information as to what factors his older associates consider necessary for success and which ones of these are considered absolutely vital.

For the established psychologist such a scale might be of value in stimulating the development of the analytical point of view both in regard to his colleagues and when evaluating candidates for positions under his jurisdiction.

The need for such a scale was felt in connection with the making of a survey of the status of psychology in Ohio.[1] In order to make possible future comparisons of state groups it seemed desirable to develop some means of evaluation of the members of such groups.

As an outcome of the survey, we were fortunate enough to have on hand detailed information regarding 144 psychologists in Ohio on all the various items included in the rating scale.

The separate items of the scale were selected on the basis of the data in the survey and after considerable discussion and correspondence with well-known psychologists, who finally unanimously offered as the most important factors those items which are now included as the major categories in the scale, namely: Training, Length of Experience, Publications, Recognized Contributions to Advancement of Experimental Techniques and Procedures, and Membership Rank in Professional Societies.

The entire scale was then submitted to 15 psychologists, who are especially schooled in statistics, with the request to distribute 100 points among the five major categories and their subdivisions according to their estimate of the relative importance of the items.[2] The scale was also submitted to 28 other well-known American psychologists so that altogether ratings were obtained from 43 psychologists. These two groups chosen rather arbitrarily will be designated as group A and group B, respectively.[3]

[1] REYMERT, MARTIN L., and ARNOLD, H. J. Survey of Conditions and Facilities for the Teaching of Psychology in the State of Ohio. *Psychol. Bull.*, **28**, 1931, 342–366.

[2] As will be seen, the scale is printed with final scale values adopted. This was done in order to avoid two printings.

[3] Group A, the statistical psychologists were: W. V. Bingham, H. Cason, F. N. Freeman, H. E. Garrett, A. I. Gates, C. L. Hull, T. L. Kelley, W. McCall, C. W. Odell, A. S. Otis, G. D. Stoddard, L. L. Thurstone, H. A. Toops, F. L. Whitney, and R. S. Woodworth.

Group B, the general psychologists were: F. H. Allport, H. J. Arnold, G. F. Arps, H. G. Bishop, E. G. Boring, H. E. Burtt, L. Carmichael, H. A. Carr, C. C. Cooper, K. M. Dallenbach, J. F. Dashiell, F. C. Dockeray, J. E. Downey, K. Dunlap, H. B. English, E. Farris, F. Fearing, S. W. Fernberger, D. H. Fryer, E. A. Gaw, L. R. Geissler, A. Gesell, A. R. Gilliland, D. T. Howard, J. Peterson, R. E. Tulloss, A. P. Weiss, and E. Woodyard.

The following general directions were given to all judges:

"Please carry out the following directions in the order indicated:

"1. Read the five general headings and sub-headings carefully, making mental note of the relative importance of the several major categories.

"2. In column 3, on the dotted lines provided, allocate to the five major categories five bids of importance totaling 100. *Be sure that the five bids recorded do actually total 100.* The following principles, perhaps, should actuate you in your judgment both here and in subsequent steps:

"It is then necessary to determine, arbitrarily, the importance of the several traits. Let several competent judges each assign 100 bids among the nine traits in question. In adjusting bids, one should keep in mind, perhaps, the following:

"(1) Variables repeated in other variables (having a high correlation with other variables) should receive a low weight.

"(2) Variables which are subject to error, other things being equal, should receive lower weights than those not so subject to error.

"(3) Variables representing an adequate sampling over a long period of time should receive a high weight, other things being equal, relative to a variable which is a sampling of only a short performance of a similar trait.

"3. Now consider the category "*Training.*" You have allotted n bids to this category. Please subdivide the n bids into 7 separate amounts, the total of which is n, writing these in a column 2 on the dotted lines provided. Note that these represent the normal maximal credit possible for each of the several sub-items, A-G. In similar fashion do the remaining four categories, Length of Experience in Years, Publications, Membership Rank in Professional Societies, and Recognized Contributions to Advancement of Experimental Technique and Procedure.

"4. Then in Column I, still further subdivide all the credits allotted in step 3 above. Some one or more of the sub-sub-categories may receive the maximum credit for that sub-category. This series of credits assigned to the six kinds of degrees (I. Training, A. Degrees for example) need not be a linear series, but to some one of the five should be allotted the maximum credit allotted to degrees."

Since the "statistical" psychologists would be able to consider the various items in the light of multiple correlation and would, therefore, presumably give the best relative weightings, it was decided to use the distributions of their ratings as the basis for the scale. After

one year, members of this group were given an opportunity to reconsider their ratings in the light of the ratings of their fellow judges with the result that only two of the fifteen judges made slight changes.

The technique used in the construction of this scale might be criticized from various angles. However, a technique like Thurstone's would probably call for so much work in the way of judgments that it would hardly be possible to induce psychologists to give the necessary time for it. As will have been apparent already to many, the method and technique used is that developed by H. A. Toops in the construction of his rating scale for the selection of assistants and instructors at Ohio State University.[4] The writer is indebted to Dr. Toops for helpful assistance throughout.

It should be noted that points were assigned to the various items in two ways, namely, as alternative values and as cumulative values, the method depending on the particular items. For example, the points assigned to the five major categories are cumulative, the total of all five being 100 points. In the case of four subdivisions, however, it seemed more convenient to use alternative ratings. These subdivisions were:

(1) I. Training—A. Degrees
(2) " B. Present Academic Position
(3) II. Length of Experience in Years
A. Years in Psychology
(4) V. Membership Rank in Professional Societies

As an example of alternative ratings may be mentioned the values assigned by rater No. 1 to the items under the category "I. Training—A. Degrees." The maximum amount assigned was 5 points. The amounts assigned to the separate items were Ph.D. 5, Sc.D. 5, M.A. 1, M.S. 1, and A.B. 0.

For the scale values of items to which points were assigned in a cumulative manner, simply the average of the distribution of assigned values was used. Where alternative values were assigned in a category a somewhat different method was adopted. Each assigned value was first changed to a per cent of the maximum number of points assigned to any item in that category. The average of these per cents was then determined. Actual scale values were then assigned in proportion to these average per cents.

A detailed statement of the procedure followed for the category "I. Training—A. Degrees" may clarify the method used. The

[4] Toops, H. A. The Selection of Graduate Assistants. *Personnel J.*, 1928, 6, 457–472.

average of the values assigned to this category was 4.9. The average per cents of the sub-items were Ph.D. 98.3, Sc.D. 91.8, M.A. 36.5, M.S. 35.6, A.B. 12.3. Consequently the full amount, 4.9 points, was taken as the scale value for Ph.D. and the scale values of the other items were determined in proportion to their average per cents. The final values were: Ph.D. 4.9, Sc.D. 4.6, M.A. 1.8, M.S. 1.8, A.B. 0.6, the total amount for degrees being 4.9 points.

Figures 1 to 5 show a comparison of the ratings of group A, statistical psychologists, and of group B, the general psychologists. In these figures are given the percentile graphs of points assigned to the five major categories by the two groups of judges. The spread of opinion on each of the categories is greater in group B than in the group A.

As shown in Figure 1, the variability of points assigned by group B is much greater than is the case for Group A. The quartile deviations for the two groups respectively are 10.2 and 4.9. The

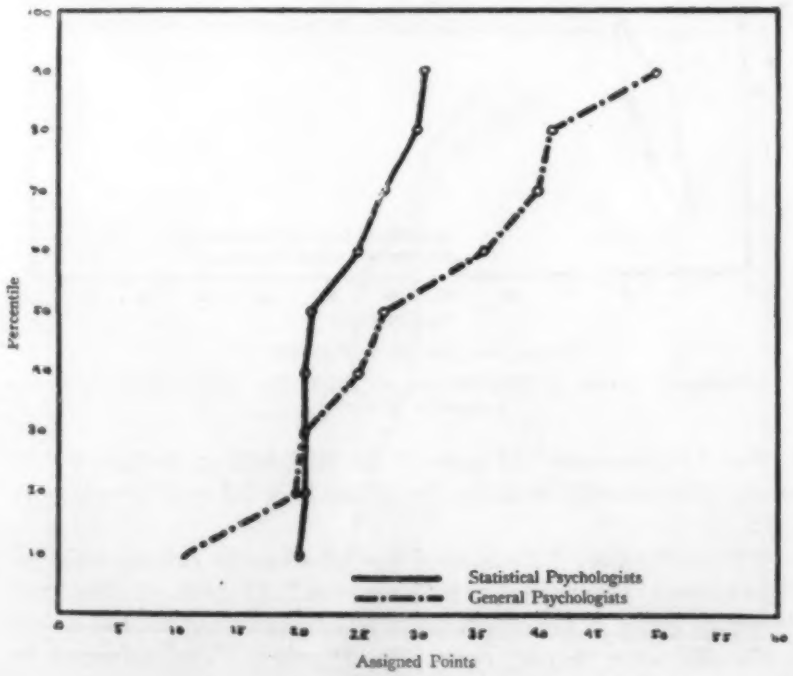

FIGURE 1—TRAINING

(Percentile curves of distributions of judgments. Only every tenth percentile plotted.)

median number of points for group B is higher by 6 points than that of group A.[8]

The variability of points assigned is somewhat less for both groups in regard to Length of Experience (Figure 2). For group B, the quartile deviation is 2.9 and for group A 2.6. The difference in medians of the two groups is only 0.4 of a point.

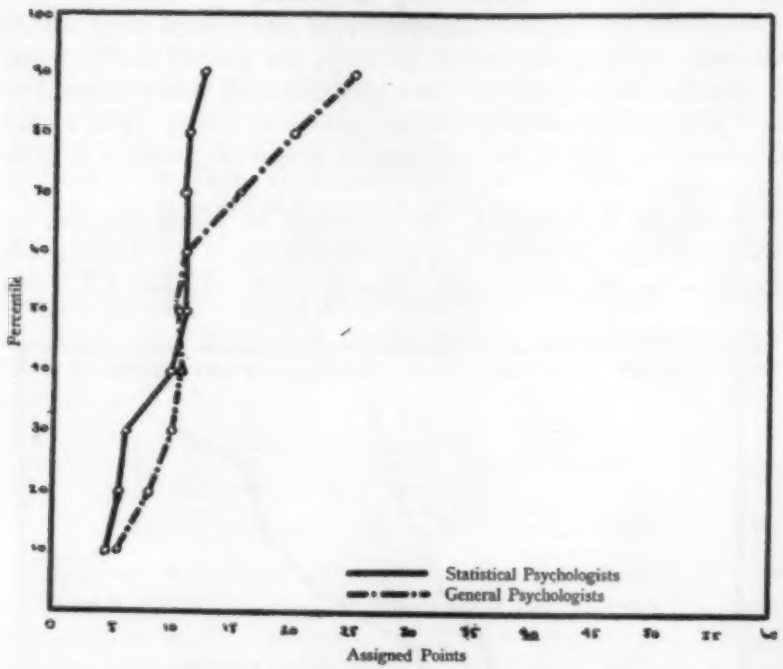

FIGURE 2—LENGTH OF EXPERIENCE

(Percentile curves of distributions of judgments. Only every tenth percentile plotted.)

For "Publications" (Figure 3) the difference in medians is five points. The quartile deviation for group B is 5.3 and for group A is 2.5.

For the category "Recognized Contributions to Advancement of Experimental Techniques and Procedures" (Figure 4), the percentiles of group A are almost uniformly higher than those of group B, the difference varying from 5 to 20 points. The difference in

[8] Elaborate statistical techniques such as the calculation of the standard deviation and the standard error of the difference of means were not employed because it is intended to show here only some general tendencies.

medians is 9 points. The quartile deviation for group B is 7.6 and for group A is 7.1.

In regard to "Membership Rank," the opinions of the two groups show considerable consistency, the difference in medians being only 0.3 of a point. The quartile deviation for group B is 4.7 and for group A 2.5.

Below are tabulated the average number of points assigned to each category by the two groups. The differences of these averages are surprisingly small, the largest one being in the category "Length of Experience" and amounting to less than five points.

The particular values are:

	Group A	Group B
I. Training	24.1	28.1
II. Length of Experience	8.5	13.2
III. Publications	29.1	25.4
IV. Recognized Contributions to Advancement of Experimental Techniques	27.6	23.3
V. Membership Rank	10.7	10.0
	100.0	100.0

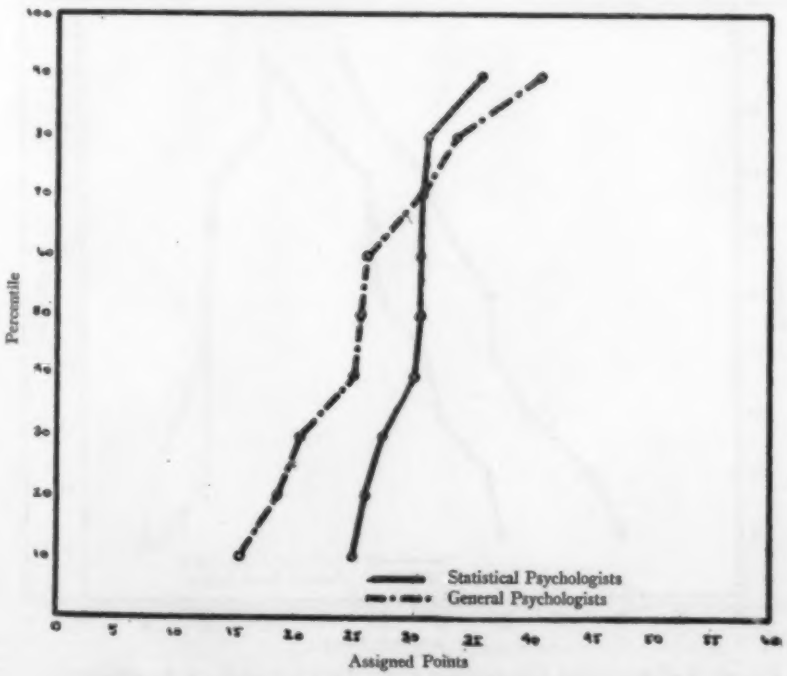

FIGURE 3—PUBLICATIONS

(Percentile curves of distributions of judgments. Only every tenth percentile plotted.)

One interesting result of this study is the apparent wide difference of opinion regarding the sub-category, " Length of Experience." Some seem to think that we never grow old or stale and that therefore we continuously accumulate points in favor of our efficiency; others think that we reach a saturation point after a definite period of service and stay there; still others are unkind enough to suggest that we depreciate materially after a certain point.

Figure 6 shows some of these results. The curves in the chart are as follows: Curve 1 represents the average points assigned by the entire group A; curve 2 represents the average points of those in group A who indicated a drop after a certain period; curve 3 represents the average points of those in group A who did not indicate a drop; and curve 4 represents the average points of group B.

All of the 15 psychologists in group A assigned values to number of years of experience in a non-linear manner. In 7 cases, the importance was assumed to reach a constant value after a certain period and to remain at this constant level even after 30 years. In only

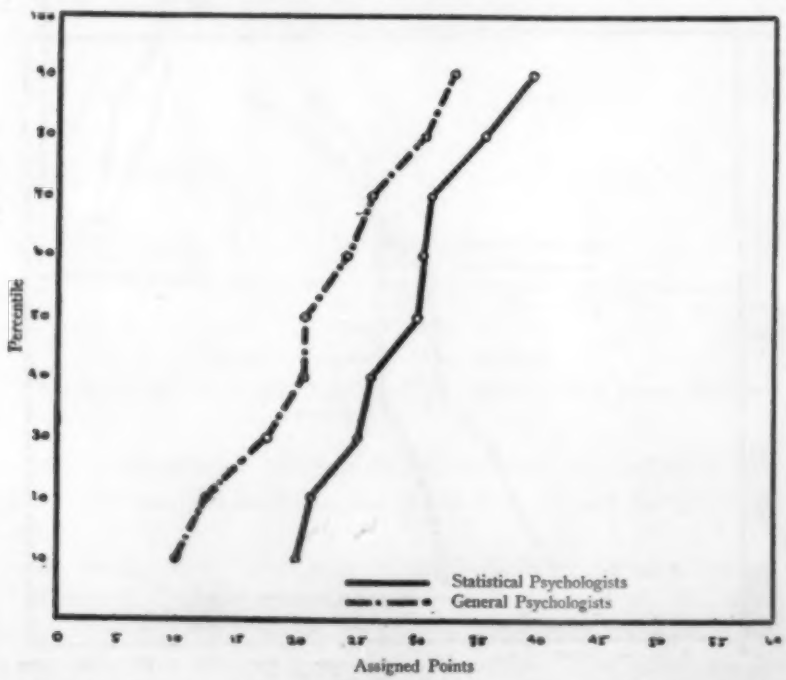

FIGURE 4—RECOGNIZED CONTRIBUTIONS TO ADVANCEMENT OF EXPERIMENTAL TECHNIQUES
(Percentile curves of distributions of judgments. Only every tenth percentile plotted.)

one case was the importance of experience considered to increase up to and after 30 years. In the remaining 7 cases, the importance was assumed to drop after a certain period, so that, for example, 30 years of experience would contribute less toward the rating of a psychologist than would 20 years. The 7 who assigned points in this manner were: Cason, Garrett, Hull, Kelley, Toops, Woodworth, and Gates. In these latter cases, in general, the importance of experience is judged to increase with increasing number of years until about 10 or 15 years and then is assumed to drop more or less gradually. Two raters assigned zero value to 30 years of experience or over and one other assigned zero value to 25 years or over. The question may be asked "When, if ever, does amount of experience reach a negative value?" The importance attached to experience of 2 years or less in group A varied from 0 per cent to 50 per cent of the maximum values. Three raters assigned a zero value to this amount of experience.

Of group B, 3 failed to assign sub-sub-points in this category.

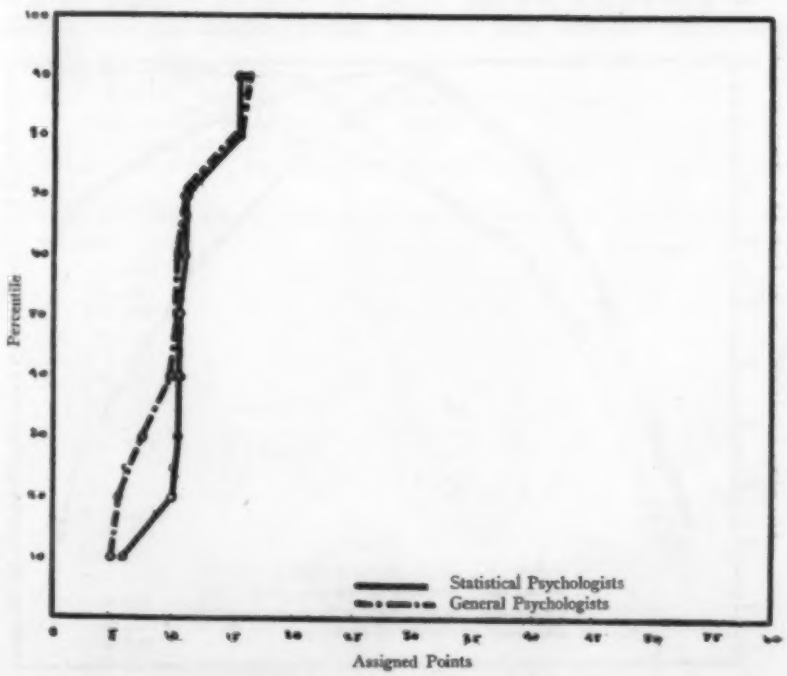

FIGURE 5—MEMBERSHIP RANK

(Percentile curves of distributions of judgments. Only every tenth percentile plotted.)

One of the remaining 25 assigned zero value to all experience regardless of amount. Of the 24 others, 8, or one-third of them, assigned increasing values to experience even up to and over 30 years. This is in contrast to the 1 of the 15 of group A who assigned values in this manner. Ten of group B, or 42 per cent, assumed that the value of experience becomes constant after a certain number of years and remains so up to and even after 30 years of experience. The remaining 6 raters indicated that the value of experience increases up to a certain number of years, and then drops with added years. These latter 6, or 25 per cent, constitute a somewhat smaller proportion of their group than did the 7 (42 per cent) of group A, using this manner of rating.

In order to obtain some measure of reliability of the scale, we are using the material of the survey of the psychologists in Ohio, in which, as mentioned before, we obtained detailed information on 144 psychologists. By means of the objective scale, this group was rated on the information obtained from the survey.

In attempting to compute actual scores on the objective scale, it was found that the scale was not entirely objective. For certain

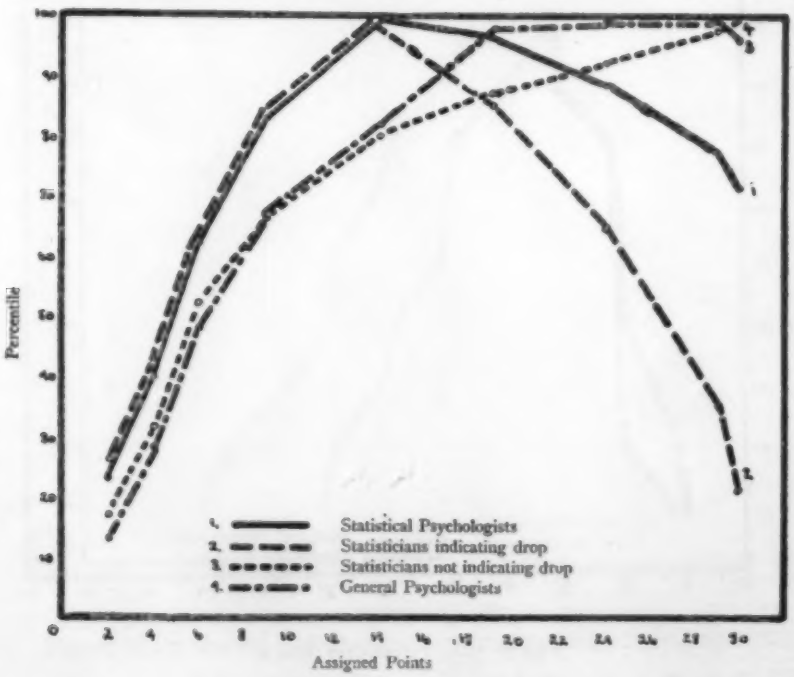

FIGURE 6—YEARS OF EXPERIENCE

items it can be observed that only maximum values were given. A specific illustration of this will be discussed first. Take the item on "Training in Psychology," that was to be given a maximum of 2.6 on the scale, but no statement was made regarding the number of points to be awarded for different numbers of hours of training in psychology. For instance, how many score points should be given to the person who had five hours, or ten hours, or one hundred hours? We will give a detailed account of how the number of score points for different numbers of hours of training in psychology was determined. (This will serve to illustrate the technique used on the other items for which only a maximum value was given on the scale. For these items the results only, and not the details of the method, will be given.) A frequency distribution was made of the number of hours of training in psychology. This distribution is shown in the following table. After inspecting the table, it was decided to give scale points for different numbers of hours of training in psychology in the following manner:

Hours	Score
No information given or 0 hours	0.0
1–49 hours, incl.	0.5
50–99 hours, incl.	1.0
100–169 hours, incl., or courses simply checked, giving no exact number of hours	1.5
170–239 hours, incl.	2.0
240–319 hours, incl., and one person stating "impossible"	2.6

FREQUENCY TABLE FOR NUMBER OF HOURS OF TRAINING IN PSYCHOLOGY

College Hours	Frequency
310–319	1
300–309	0
290–299	2
280–289	0
270–279	0
260–269	1
250–259	0
240–249	0
230–239	1
220–229	0
210–219	1
200–209	0
190–199	0
180–189	0
170–179	1
160–169	0
150–159	0
140–149	1
130–139	2
120–129	2
110–119	5
100–109	5
90–99	1

College Hours	Frequency
80–89	5
70–79	11
60–69	10
50–59	14
40–49	6
30–39	19
20–29	18
10–19	13
0–9	3
No information	16
Page missing	5
Impossible	1
Courses checked	1

A number of other items in the original scale were also not strictly objective in the sense that only a maximum score was assigned for that particular item. These items (in addition to Training in Psychology) were as follows:[6]

TRAINING:

- Amount of Laboratory Training
- Training in Background Subjects
  - Other sciences (biology, chemistry, physics, physiology and neurology)
  - Philosophy (ethics, logic, and philosophy)
  - Mathematics
  - Statistics
- Training in vacation period (summer)
  - Attending University
  - Research
  - Travel

PUBLICATIONS:

- Books
- General articles (no experiment)
- Experimental studies (original research)
- Review and abstract service

Treating these items in the manner illustrated above on Training in Psychology, the method which was devised for assigning scores is shown in the completed scale which follows:

[6] Certain items that appeared on the Rating Scale were not used in computing the final score because the information necessary to score these items was not given in the questionnaire filled out by the Ohio psychologists. Those items were: Editorial Service, under the general topic of Publications; the entire section on Recognized Contributions to Advancement of Experimental Techniques and Procedures, including New Apparatus, Improvement of Technique and Method, Statistical devices, and important contributions to systematic psychology involving new points of view for experimentation. These items and also the item asking for Training in Vacation Period should be stated more definitely in the questionnaire.

RATING SCALE FOR PSYCHOLOGISTS

Giving Maximum Points to be Assigned to the Various Items

	Maximum Point Values	
I. TRAINING		
A. Degrees		4.9
Ph.D.	4.9	
Sc.D.	4.6	
M.A.	1.8	
M.S.	1.8	
A.B.	.6	
B. Present Academic Position		4.5
Prof.	4.5	
Assoc. Prof.	3.1	
Ass't Prof.	1.8	
Instructor	.8	
Assistant	.3	
C. Appointments		2.4
Fellowships	1.3	
Scholarships	.3	
Assistantships	.8	
D. Amount of Laboratory Training		3.4
No information or 0 hours	0.0	
1–50	0.5	
51–150	1.0	
151–250	1.5	
251–350, and five persons stating "indefinite"	2.0	
351–500	2.5	
501–1000, including one stating "several hundred" and four with "years"	3.0	
1001–7500, including one who stated "plenty," four "impossible," and one "Oh, Lord"	3.4	
E. Other Training in Psychology		2.6
No information given or 0 hours	0.0	
1–49 hours, incl.	0.5	
50–99 hours, incl.	1.0	
100–169 hours, incl. or courses simply checked, giving no exact number of hours	1.5	
170–239 hours, incl.	2.0	
240–319 hours, incl. and one person stating "impossible"	2.6	
F. Training in background subjects		4.7
Other Sciences (Physics, Physiology, Neurology, Biology, and Chemistry)	1.9	
No information or 0 hours	0.0	
1–14, inclusive	0.5	
15–39, incl., and one who gave courses taken, not stating hours, and five who checked the subject	1.0	
40–74, incl.	1.5	
75–157, incl., and one who simply stated "years"	1.9	
Philosophy (Ethics, Logic and Philosophy)	.5	
No information, or 0 hours	0.0	
1–24, incl., and five who simply checked the subject	0.2	
25–79, incl.	0.5	

		Maximum Point Values
I. TRAINING—*Continued*		
Mathematics		1.2
No information or 0 hours	0.0	
1–9, incl., and six who simply checked the subject	0.5	
10–24, incl.	1.0	
25–69, incl.	1.2	
Statistics		1.1
No information or 0 hours	0.0	
1–9, incl., and three who simply checked the subject	0.5	
10–39, incl.	1.1	
G. Training in vacation period		1.6
Attending University	.4	
No information or 0 hours	0.0	
1–6 weeks, incl., and those who wrote "yes"	0.2	
Over 6 weeks	0.4	
Research	.9	
No information or 0 time	0.0	
Persons who simply said "yes," "anything," or "in the past"	0.9	
Travel	.3	
No information or no travel	0.0	
Persons who said nothing at all	0.3	
TRAINING (Total points)		24.1
II. LENGTH OF EXPERIENCE IN YEARS		
A. Years in Psychology		7.2
0–2	1.7	
3–4	2.9	
5–6	4.5	
7–9	5.9	
10–14	7.2	
15–19	7.0	
20–24	6.4	
25–29	5.6	
30 and over	5.1	
B. Number of years in present position		1.3
Under 5 years	.2	
Over 5 years	1.1	
LENGTH OF EXPERIENCE (Total points)		8.5
III. PUBLICATIONS		
A. Books		8.6
No information or no books	0.0	
1 book	2.0	
2 books	4.0	
3 or more books	8.6	
B. General Articles (no experiment)		4.6
No information or no articles	0.0	
1 article	1.0	
2 articles	2.0	
3 articles	3.0	
4 articles	4.0	
5 or more articles	4.6	

	Point Maximum Values	
III. PUBLICATIONS—*Continued*		
C. Experimental Studies		10.3
No information and no studies	0.0	
1 study	2.0	
2 studies	4.0	
3 studies	6.0	
4 studies	8.0	
5 or more studies	10.3	
D. Editorial Service		3.1
E. Review and Abstract Service		2.5
No information or no service	0.0	
Some service	2.5	
PUBLICATIONS (Total points)		29.1
IV. RECOGNIZED CONTRIBUTIONS		
A. New apparatus		3.9
B. Improvement of technique and method		10.0
C. Statistical devices (formulæ)		4.9
D. Contributions to systematic psychology		8.8
RECOGNIZED CONTRIBUTIONS (Total points)		27.6
V. MEMBERSHIP RANK		
A. Associate		2.2
B. Member		5.6
C. Fellow		8.1
D. Officer		10.7
E. Promoter		7.5
MEMBERSHIP RANK (Total points)		10.7

In order to compare the objective scale with purely subjective general impressions, two Ohio psychologists have rated those psychologists in our group whom they knew. This makes it possible to compare the two subjective ratings with each other and also with the different parts and the total of the objective rating scale. There were only 44 subjects on whom all the data were available for such a comparison. A table is given of all possible intercorrelations between the two subjective ratings, the four parts, and the total of the objective rating scale.

INTERCORRELATIONS, MEANS, AND STANDARD DEVIATIONS OF PARTS OF PSYCHOLOGISTS' RATING SCALE AND SUBJECTIVE JUDGMENTS OF TWO RATERS

	Mean	S.D.	Rater 2	Rater 1	Total	Pt. 5	Pt. 3	Pt. 2
Part 1—Training	13.09	3.79	.40	.33	.67	.57	.39	.25
Part 2—Length of Experience	5.18	2.43	.35	.21	.62	.57	.46	
Part 3—Publications	7.71	7.14	.47	.37	.91	.65		
Part 5—Membership Rank	2.80	2.31	.68	.56	.84			
Total	34.86	12.87	.59	.46				
Rater 1	3.00	1.43	.71					
Rater 2	4.80	2.72						

N=44

These correlations are all positive and range from .21 to .91.

Regarding the correlation of the different parts of the objective scale with the total, Publications shows the highest correlation (.91). The next highest correlation is between total score and Membership Rank (.84). The lowest correlation is that between Length of Experience and total score (.62).

For the small number of cases available, the two factors which correlate the highest with total score on this rating scale are Publications and Membership Rank. In the case of Publications, this high correlation is not strange when we remember that in forming a total score the different parts are weighted in proportion to their standard deviation and the standard deviation of Publications is larger than the standard deviation of any other part of the objective scale. In the case of Membership Rank, we find that it has the lowest standard deviation of any part of the objective scale. Hence, according to the technique used of simply adding the gross scores on the parts to determine the total score, the factor of Membership Rank was weighted less than any other factor (weight being proportional to standard deviation). Yet it showed the next to the highest correlation with the total score.

The two subjective ratings correlated quite highly with each other (.71). The correlations of the ratings of rater No. 2 with the parts of the objective scale and the total were all higher than the corresponding correlations of the ratings of rater No. 1. For the ratings of rater No. 1, the lowest correlation was with part II—Length of Experience (.21). The next highest correlation was with part I—Training (.33). The next highest correlation was with part III—Publications (.37). The next highest was with the total of objective rating scale (.46), and the highest was with part V—Membership Rank (.56). It is rather striking to note that while the correlations of rater No. 2 were all higher, the order of magnitude was exactly the same as for rater No. 1.

Summary

1. A first attempt has been made to construct as objectively as possible a rating scale for psychologists. Fifteen statistical psychologists and 28 general psychologists were asked to distribute 100 points over items previously determined to be of importance for judging the efficiency and standing of a psychologist. The point distributions of the group of statistical psychologists were made the basis for the objective scale.

2. The scale, as thus constructed, was then used on 144 Ohio

psychologists on whom data were available from a former state survey.

3. Subjective ratings were given by two well-known Ohio psychologists on the basis of a subjective general impression, these judges having no knowledge of the objective ratings but basing their opinions only on general knowledge and acquaintance with the subjects rated. It happened that only 44 psychologists were rated by both of the raters. On this group of 44 psychologists, it was possible to compare the subjective ratings with each other and with the objective scale.

4. Various results are given as tentative only and it is to be hoped that the method and technique here employed will be further elaborated upon, if possible in more exact words, and they might serve as incentives to others to attempt the construction of a still more accurate rating scale for psychologists.

In conclusion, it may be mentioned that regardless of the value of the present scale, the younger psychologists, at least, from this attempt will be able to get an insight into the relative weight of the different factors which the older and well-established psychologists consider important for the development of a scholar in their field.

WUNDT'S DOCTORATE STUDENTS

BY SAMUEL W. FERNBERGER

University of Pennsylvania

When reading Tinker's interesting and valuable compilation of the list of Wundt's doctorate students and their theses,[1] I was impressed with the number of unfamiliar names. Believing that I could not be so extremely deficient in a knowledge of those psychologists who had contributed considerably to the literature of psychology, I began to look up many of these names.

The obvious first objective reference source was Murchison's *Register*.[2] Here I discovered only 30 names included in the list of 186 given by Tinker. So I turned to the other objective source, Boring's list of psychologists who died between the year 1903 and 1927.[3] From this list I was able to add just two more names, bringing the total to 32.

It is obvious that neither the Murchison nor the Boring lists are absolutely complete. The difficulties of such a compilation are understandable. For example the name of the late Harald Höffding does not appear in Murchison's list even though he would have been the President of the recent International Congress of Psychology had he lived. It will be pointed out that a gap of two years exists between the appearance of Boring's list and that of Murchison. It may be that some deaths occurred during this two year period. It is safe to say, however, that the two lists include the very great majority of the professional psychologists who have made psychology a career and who have contributed considerably to the psychological literature. A careful consideration of Tinker's list of Wundt's doctorate students enabled me to add two more names of 'noted' psychologists (Willy Hellpach and Willy Westphal). Further possible additions would have necessitated a study of literary sources which could not have been accomplished without considerable (and I believe unprofitable) research. From the two lists, then, and with additions from my own

[1] M. A. Tinker. Wundt's Doctorate Students and Their Theses. *American Journal of Psychology*, **44**, 1932, 630–637.

[2] C. Murchison (Editor). *The Psychological Register*, Worcester, 1929.

[3] E. G. Boring. Psychological Necrology (1903–1927). *Psychol. Bull.*, **25**, 1928, 302–305, 621–625.

knowledge I was able to get together a list of only 34 names of 'noted' psychologists among the doctorates given by Wundt between the years 1875 and 1920.

And these 34 names of 'noted' psychologists is culled from a list of 186 names. Tinker has from "'inspection' of the titles of theses" been able to "roughly classify the subject matter investigated." If we accept his classification, then 70 of the 186 theses were philosophical in content and should be eliminated from the list of purely psychological doctorates.

We have left, then, 116 purely psychological titles which include our 34 known names. In other words only slightly under 30 per cent of Wundt's purely psychological doctorate students ever attained any reasonable degree of subsequent psychological prominence. The situation is even more astonishing when it is considered that of this 34 total, 11 were Americans and two more (Münsterberg and Titchener) although not Americans have become identified primarily with American psychology and one more (Kirschmann) was primarily identified with the development of psychology in Canada. Thus 14 of the 34 outstanding psychologist's from Wundt's laboratory did their major work on the western continent. The other countries are represented as follows: Germany, 15; England, Austria, Argentina, Italy and Switzerland each 1.

The compilation of these 34 cases by years of the granting of the degree shows an interesting break at the period 1900–1901. Before 1901 the countries represented as the place of labor by Wundt's 'noted' doctorates is America, 13 (including Kirschmann, Münsterberg and Titchener); Germany, 3; and Switzerland, Italy and Austria each 1. Subsequent to 1900 there is a complete change in favor of Germany. In this latter period, Wundt's laboratory contributed 12 'noted' psychologists to Germany while Argentina, England and the United States received only 1 each. It is interesting that of the first 19 'noted' psychologists who received Wundt's doctorate 13 did their major work in America. By 1900, however, there were so many laboratories established in America that the American students no longer had to go to Germany for psychological training. After 1900 Wundt's supply of students who became 'noted' came primarily from Germany.

The distribution of these 34 'noted' psychologists in accordance with the years of the granting of their degree is interesting inasmuch as it shows a wide and surprisingly even spread. The first year represented in the list is 1885 (Münsterberg) and the last year is 1915. Of this period of 31 years 'noted' psychologists were granted

degrees in 24 while in only 7 years one finds that no 'noted' psychologist received a degree from the Wundt laboratory. It would seem unusual that in each of 24 out of 31 years, there would be at least one man who subsequently contributed largely to psychology. The distribution is: 3 degrees in each of 2 years; 2 degrees in each of 6 years; 1 degree in each of 16 years, and 0 degree in each of 7 years.

It happens that the list of doctorates from the University of Pennsylvania is readily available and, inasmuch as this was one of the very earliest American universities to establish graduate and doctorate work in psychology, a comparison of this list with Wundt's doctorates is not without interest. It is our belief that the situation at Pennsylvania is typical of other large American universities with long established graduate courses in psychology. The first psychological doctorate granted at the University of Pennsylvania was in 1893. From then until 1920—which seems the most appropriate date for comparison with Wundt's list—33 doctorates were granted in psychology at the University of Pennsylvania. Of these 33, a total of 22 names appear either in the lists of Murchison or Boring while 11 names do not appear. Thus 66 per cent of the Pennsylvania doctorates are among the 'noted' psychologists as against less than 30 per cent from Wundt's doctorates who presented strictly psychological theses. This difference becomes even more marked when one considers another five year period for the Pennsylvania doctorates ending in 1925. During this subsequent period (1921–1925) 14 doctorates were granted at the University of Pennsylvania in psychology of whom 12 names appear in the objective lists and only 2 names do not appear. So for this period over 85 per cent of the Pennsylvania doctorates appear among the lists of 'noted' psychologists.

Let me hasten to add that I am by no means implying by this comparison that the grade of students in this American university was of better quality than those that went to Leipzig to study under Wundt. I am merely pointing out that we know more about the subsequent history of a much larger proportion of American psychological doctorates than we do about those from Wundt's laboratory. We know that a very much larger percentage of the American doctorates followed psychology as a career. And the reason is, perhaps, rather obvious. In America psychology continued to grow as an academic discipline and as a field of social service much more widely than it did in Europe. There were relatively not only more American jobs but also the American student has a different attitude toward

the purpose of his graduate work. As a result of his doctorate, the American hopes to obtain a place in an academic institution of college or university grade and so make a psychological career. On the other hand, the European has frequently no such ambitions and is quite often content with the honor of being called "Herr Doctor" and with sinking back to instruction in a gymnasium.

But I am interested in knowing what happened to the other 82 psychological doctorates of Wundt of whom there is no trace from psychological sources. I have knowledge of one case only—Hugo Eckener (Ph.D. 1893) who became Graf Zeppelin's assistant and subsequently the authority on lighter-than-air craft.

BOOK REVIEWS

DAMPIER-WHETHAM, WILLIAM C. D. *A History of Science and Its Relations with Philosophy and Religion.* New York: The Macmillan Company, 1930. Pp. viii+514.

Something of the general appeal of this book is indicated by the fact that the present second edition followed the first edition in less than a year. The book, no doubt, has been widely attractive because of the large number of important facts which it contains, and because it is well organized and well written.

The scope of the volume may be indicated by the chapter headings which are as follows: (1) Science in the Ancient World, (2) The Middle Ages, (3) The Renaissance, (4) The Newtonian Epoch, (5) Nineteenth-Century Physics, (6) Nineteenth-Century Biology, (7) Nineteenth-Century Science and Philosophic Thought, (8) Recent Development in Biology and Anthropology, (9) The New Era in Physics, and (10) Scientific Philosophy and Its Outlook.

As the present review is intended primarily for psychologists only those portions of the work which deal with psychology will be considered here. The treatment of psychology begins with the statement that "the mind of man can be studied in two ways, rationally or empirically." The author then proceeds to consider these two methods, particularly in regard to rather wide generalizations concerning national attitudes toward psychology, and particularly toward the relationship between psychology and metaphysics. At this point brief references are made to Bain, Mill, Berkeley, Mesmer, Gall, Young, Newton, Helmholtz, Wheatstone, Weber, Beneke, Lotze, Wundt, Fechner, Darwin, Cabanis, and other contributors to psychology. In this part of the book the author refers to J. T. Merz's "History of European Thought" for authority.

At a later point the author takes up experimental psychology, using the "Textbook of Experimental Psychology" by C. F. Myers and F. C. Bartlett as his authority for the statement that there is a type of psychology which may be classed as a natural science. In this portion of the work the professional psychologist may feel that he is reading the words of one who is not thoroughly acquainted with psychology. An example of the author's use of psychological terms may be found in the following sentences: "The acuteness of sight,

taste, smell and feeling can be measured by mechanical devices. More complex tests of the same kind can estimate memory, attention, association, reasoning and other faculties; while another set of tests deals with fatigue, reaction to stimulus, and coördination between hand and eye. As an example we may instance the experiments of Miss Kellor of Chicago on the effects of emotion on respiration, as a result of which she found that negresses are less affected than white women. In all such investigations, psychology is treated by the objective and analytic method of natural science."

Lloyd Morgan, a "British psychologist" who "founded the American school of animal psychology," is credited as propounding the fundamental ideas recently presented by John B. Watson in his "Behaviorism." In reviewing behaviorism the author urges that behaviorism finds only stimuli and responses because its axioms deal only with stimuli and responses. This criticism is one with which many American experimental psychologists would take issue.

In concluding the treatment of psychology some references are made to the various practical applications of psychology. Strangely enough in this connection psychical research is spoken of as an application of psychology. Throughout the work there are other references to psychology, but on the whole they are not completely adequate. On various pages the author makes many generalizations in regard to the racial characteristics of scientists and the scientific method. To the reviewer this seems to be a hazardous procedure, but for the time being to meet Mr. Dampier-Whetham on his own ground, a nationalistic generalization might be ventured in regard to the author's views on psychology. Such a generalization, however, might be too unfair to modern scientific British psychology.

One author can not master even the outlines of all modern science, but in the history of a field such as psychology reference to secondary source material gives a surprisingly adequate picture of the development of the science. So far as the reviewer can discover, however, there is no reference in the present work to any of the best known histories of psychology. Works on the history of psychology by Baldwin, Boring, Brett, Klemm, Murphy, Pillsbury, and Warren are not mentioned.

The statement is often made that the only test which a scholar can make of the accuracy of a general compilation of any sort is to read with care that part of the work which deals with his specialty. According to this criterion the psychologist is apt to be unfavorably impressed by the present volume, but in the reviewer's opinion at least, such an attitude will be distinctly unfair. Mr. Dampier-

Whetham is undoubtedly more at home in the other sciences than he is in psychology, and he has succeeded in summarizing within brief compass much important material which may well give the scientific layman and scientist alike a new point of view in regard to certain aspects of modern experimental investigation.

LEONARD CARMICHAEL

Brown University

STOUT, GEORGE F. *Studies in Philosophy and Psychology.* New York: Macmillan, 1930. Pp. xi+408.

This collection of sixteen miscellaneous papers by Professor Stout is about equally divided between psychology and philosophy. The papers of psychological interest are: I. The Herbartian Psychology; II. Voluntary Action; III. Perception of Change and Duration; IV. The Nature of Conation and Mental Activity; V. Ward as a Psychologist; VI. The Common-sense Conception of a Material Thing; VII. Things and Sensations; and VIII. In What Way Is Memory-Knowledge Immediate? These papers are not all recent, but range in date from 1888 to 1927.

The book owes what unity it possesses in spite of its diverse subject matter to the fact that all the essays bear upon and help to illuminate certain central concepts of the author. Among these are his theory of conation, with its stress on the active nature of mental process, and its invariable objective reference; his handling of the apperception problem; his concept of "presentations," and particularly the anoetic consciousness; his strenuous opposition to "self" or subject as a distinct principle over and above the unity of mental events; his peculiar use of the immediacy-mediacy distinction; his theory of relations, which seems to have in a sense anticipated the configurationist and emergentist contentions, at least with reference to form apprehension.

To anyone familiar with the *Analytic Psychology* of 1896, there will be apparent certain important shifts of position, though chiefly of a metaphysical nature, and not so significant for psychology. Among these are: (1) The abandonment of the concept of purely mental action, and the affirmation of the unity and inseparability of "the embodied self"; (2) the denial of the separability of matter from its sensible appearance; (3) a shift in the use of the word "presentation" from its meaning of the sense factor or element experienced, to mean the object itself considered as being experienced.

The essay on Herbart's psychology is probably the most lucid,

concise exposition of his system that exists. By clearly separating the synthetic theory of interaction of presentations and the laws thereof from the analytic attack on Cognition, Feeling, and Desire, Stout shows the way to a sifting of Herbart's metaphysical chaff from his psychological wheat. Strangely, he then joins Herbart in his conviction that his introspective account of the ego-consciousness was his crowning achievement. Whether Stout would, now, applaud a "self-determined" and "self-known" ego is, I think, doubtful. Due to the popularity of psychoanalysis an exposition of Herbart's "Unconscious" is not yet hopelessly out of date, even though many of us wish it were.

The chapter on voluntary action is devoted to a refutation of Shand's theory of willing as "an attitude of mind having a distinctive quality incapable of further analysis," and the presentation of an alternative view of his own. This latter view makes volition "a desire qualified and defined by the judgment that, so far as in us lies, we shall bring about the attainment of the desired end." Hence the so-called unique quality is really only a cognitive ingredient.

It is in his discussion of conation that Stout shows himself still an ardent advocate of a dynamic and functional viewpoint in psychology. Any attempt to analyze conative consciousness which ignores objective reference "is doomed to failure." And, again, "whatever can be properly called mental activity must . . . be capable of playing a peculiar part in determining the course of events." Conation is a felt tendency toward the production of certain results. Titchener, along with the other structuralists, is accused of a vicious subjective idealism, in the assumption that the real mind is merely a sensation complex. Above all, conation is not to be confused with mere motor sensation, or the after-effect of muscular strain.

The sixth essay is a very sympathetic discussion of some features of Ward's psychology, principally revolving around his exposition of the development of individual experience, and of the appearance of self-consciousness, and his doctrine of the pure ego. However, the disciple, Stout, comes to clash with the master, Ward, on certain issues. Ward seems to regard presentations as a *tertium quid*, intervening between the knowing mind and the real world. As we pointed out, Stout has broken with this view; but perhaps, as he suggests, Ward is merely advancing the Leibnizian view that the point of view of a monad is its own body. Again, Stout points out that if, as Ward argues, thought first arises after previous stages which can be accounted for without it, it emerges as a radically new

faculty; but this constitutes a breach of continuity. Sense, says Stout, without thought would be blind. How then can mental development consist merely in progressive modification of the sensori-motor continuum? Finally, Stout finds that Ward really deals with two distinct egos in his psychology; one the empirical ego, which emerging from the mass of bodily experiences takes shape as the unity of mental content, and to this Stout subscribes; but another, a "pure ego" is postulated, quite distinct from this, which he insists is as unnecessary in psychology as the "vital principle" is in biology. Most psychologists would agree with him, if we except Miss Calkins and her disciples, who of course inherit from Ward.

This is not the place to discuss the philosophical papers in the collection, but never is the author so much at home as in these hair-splitting logical duels in which he aims his razor-edged dialectical weapon against some of the most formidable opponents of the day, Bradley, Russell, and the like. Where he scores on them it is as the psychologist who sees aspects of the problems dealt with that escape the logicians with their different background. Two good examples of this appear on pages 244 and 249, in his analysis of Russell's theory of judgment. No doubt many a futile quibble in philosophy as well as many a futile quibble in psychology would never arise if philosophers were more conversant with psychology and psychologists with philosophy. Stout fortunately is both, yet in the final reckoning is there an element of futility in his armchair psychology of a lifetime?

ARTHUR G. BILLS

University of Chicago

FORD, ADELBERT. *Group Experiments in Elementary Psychology.* New York: Macmillan, 1931. Pp. vi+241.

FORD, ADELBERT. *Instructor's Manual for Group Experiments in Elementary Psychology.* New York: Macmillan, 1931. Pp. 12.

The student's manual and notebook is a paper-bound volume with pages perforated for ready removal. Materials for a fourth of the 44 experiments are bound in the manual; the rest require special apparatus or equipment. A third of the experiments call for specified motion picture films. The instructor's manual and supplementary sheets furnished by the publishers give all the information necessary for preparing or purchasing the materials. The manual is in line with a popular trend in teaching psychology which includes an increasing number of experimental demonstrations in elementary

classes without requiring the tedious and time-consuming laboratory. The student's time is spent in the accumulation and interpretation of data rather than in the complications of wiring and adjusting instruments. The manual is a valuable aid to the instructor who is feeling his way in such a course.

The apparatus may be lacking in some laboratories. Projection equipment is assumed: it would be embarrassing to use the manual without motion pictures. The apparatus illustrated is for the most part original rather than standard, such as a projection chronoscope, sound projector, lie detector, Michigan demonstration maze. It seems to the reviewer that in the smaller laboratories expense and difficulty in construction would prevent the use of these special pieces, while in the larger laboratories local substitutions would often be made. In either case, the diagrams and explanations in the text would be of little help to the student.

The experiments are solid, and they avoid the slipshod and trivial.

ERNEST R. HILGARD

Yale University

LINDWORSKY, JOHANNES. *Experimental Psychology.* (Translated from the fourth German edition, 1926, by Harry R. DeSilva.) New York: Macmillan, 1931. Pp. xix+406.

Professor Lindworsky writes in the spirit of one of his teachers, Oswald Külpe, continuing the elementarism of Wundt, but seeking such new elements or combinations as are necessary to describe adequately the higher mental processes. Both author and translator emphasize the treatment accorded the apprehension of relations. This is a genetic theory: the apprehension of relations is not an elementary cognitive act, but rather a product of development. The author's treatment of configurated experience subsumes the facts dealt with by the *Gestalt* psychologists. In limiting himself in this treatise to a relatively static, introspective viewpoint, the author recognizes that he is omitting important considerations of differential, genetic, and applied psychology.

The excellent discussion of higher mental achievements, comparison, concept and meaning, certainty, the "I"-consciousness, the higher feelings, the volitional life, by its very unfamiliarity indicates certain shortcomings in American laboratory psychology. It is strange to us to find an experimental psychology totally lacking in tables, graphs, correlation coefficients, or other devices presenting quantitative results. This does not mean that the book is not full of facts, but its facts are of the kind which we deal with little in our

laboratories because we have not developed adequate methods for quantifying them.

It may be a treat to some to find a psychology that does not mention Sherrington, Pavlov, or Watson.

ERNEST R. HILGARD

Yale University

Clinical Psychology, Studies in Honor of Lightner Witmer. Edited by Robert A. Brotemarkle. Philadelphia: University of Pennsylvania Press, 1931. Pp. xxxi+409.

At a special meeting of the Faculty of the College of the University of Pennsylvania on December 11, 1931, Professor Lightner Witmer was presented with a commemorative volume prepared by former students and colleagues in honor of the thirty-fifth anniversary of Professor Witmer's founding of the Psychological Clinic at the University of Pennsylvania in 1896. This was the first clinic of the sort to be established in the development of psychology. The volume which is entitled *Clinical Psychology* was edited by Professor Robert A. Brotemarkle. Dr. Josiah H. Penniman, Provost of the University of Pennsylvania, made the commemorative address and the volume was presented by Dr. Thomas S. Gates, President of the University.

The volume contains original articles by 29 of Professor Witmer's former students and colleagues and reprints of three of Professor Witmer's important articles in the field of Clinical Psychology. The list of authors follows: J. H. Penniman, Joseph Collins, Samuel W. Fernberger, Francis N. Maxfield, Alice M. J. Rockwell, Dorothy K. Hallowell, Miles S. Murphy, Edwin B. Twitmyer, Gladys G. Ide, Robert A. Brotemarkle, Morris S. Viteles, Henry J. Humpstone, Reuel H. Sylvester, Henry E. Starr, Arthur Phillips, David Mitchell, Stevenson Smith, Anna J. McKeag, Anna E. Biddle, Karl G. Miller, Jacob D. Heilman, Frank H. Reiter, Franklyn Paschal, Charlotte Easby-Grave, Earl S. Rudisill, Clara H. Town, Robert H. Gault, and Dallas E. Buzby.

E. S. R.

SCHEIDEMANN, N. V. *The Psychology of Exceptional Children.* Boston: Houghton, Mifflin Co., 1931. Pp. xvii+520.

Classes for exceptional children in our public schools are increasing yearly, both as to the number of children so classified and as to types. There is a growing body of literature dealing with the psychological, educational, sociological and physical characteristics of these

different kinds of children. Principals, superintendents and teachers are expected to know the main facts that have so far been reported about such children. This book sets out to present these facts and does it very well. A good survey of the pertinent information about the following is given: the speech defective, the feebleminded, the gifted, the psychoneurotic, the psychopathic, the deaf, the blind, and the delinquent. The problems of handedness and word-blindness are discussed. Exercises and a selected bibliography follow each chapter. The book will serve as an excellent textbook for classes in the psychology of the exceptional child.

R. PINTNER

Teachers College, Columbia University

FILTER, RAYMOND O., and HELD, OMAR C. *The Growth of Ability.* Baltimore: Warwick and York, 1930. Pp. vii+174.

The present number of the *Educational Psychology Monographs* attempts to present an account of learning as the chief part of a discussion of individual differences in test performance. In this framework the authors aim "to present the major problems of the psychology of learning without abstracting these problems from their natural settings and thus destroying their fascination" (Preface, p. v). The initial step toward this goal is a short chapter on non-scientific sources of information, in which the authors profess sympathy for the view which avoids "misplaced emphasis upon motive by the simple expedient of overlooking the problem altogether" (pp. 12–13). There follows a discussion of ability, which means to know how to do and which is what tests measure. The rest of the book is more immediately concerned with learning.

Learning starts out from simple reflexes and develops by the principle of the conditioned response, than which no other principle is needed. Redintegration, for example, is styled "a critical restatement of our whole account," but it is proposed to "render it innocuous through neglect in the remainder of our account" (p. 59). The conditioned response type of explanation is consistently adhered to throughout the remaining discussions of serial response, individuality, and the elimination of responses, as well as in the second section of the book, devoted to practical considerations, such as habit formation and hygiene, and factors of economy in learning.

The authors have set for themselves a tremendous problem, the scholarly execution of which would be of the first importance. To cover critically "the major problems of the psychology of learning" would be task enough; to construct a picture of the growth of ability,

in which learning is but a part of the story, is eminently more difficult still. It could scarcely be hoped that 165 small pages of text could contain a satisfactory attempt. There is, admittedly, ground for differences of opinion about what are fundamental problems, but it seems to the reviewer that by no means all of the major problems of learning have been introduced. The matter of the learning curve and of transfer are, among others, unexamined; and retention, without which growth of acquired ability would be impossible, is almost unnoticed. The treatment of the problems which are discussed often takes no more than trivial notice of views which differ from the authors' and of divergent facts. The fixation and elimination of responses is far from the brief and simple matter which they make it; and their general account of the conditioned response takes little notice of the experimental facts about conditioning or of the difficulties which the conditioned response, as a general principle, has to meet. One has the feeling that, as in the two instances quoted, opposing facts and theories are to be rendered harmless(?) by ignoring them. In places it seems as if a striving after a certain rhetorical flourish had been permitted to substitute for direct attack. The book, withal, ranges over a wide field and treats of some fundamental problems. There is a bibliography of 62 titles.

JOHN A. MCGEOCH

University of Missouri

PYLE, W. H. *The Psychology of the Common Branches.* Baltimore: Warwick and York, 1931. Pp. vii+381.

The general problem which the author has attacked in this volume is one of great importance—how to conduct the beginning student through the maze of experimental and discussional material relating to certain problems and have him come out with the most important principles. One method would be to present extensive bibliographies and leave the rest to the instructor. Another method would be to abstract the experimental studies and then interpret or not as one wished. Very often the dilemma is solved by dogmatic statements without any effort to indicate their experimental justifications.

There are at least two considerations at hand. On the one hand it is assumed that the student must be made ready to take charge of a class and do something or other with respect to reading, arithmetic and the like. The quickest and least troublesome method has always been of course to tell students the "correct" answer. As the "correct" answer changes with new reports from experimental

studies or whatever it is that makes the answer change, someone must be at hand to pass on to the teacher the new "correct" answer.

On the other hand it can be assumed that it is desirable to permit teachers to take part in the determination of methods. They are made familiar with the evidence either by reading the original studies or abstracts and gradually helped to interpret conflicting findings. Anyone who has attempted such a plan knows the numerous difficulties it involves.

Professor Pyle endeavors to provide something for each plan. The body of the book is made up of his ideas about how reading, spelling, writing, and arithmetic should be taught. In the preface he states that his purpose is to present the principles as determined by experimental evidence. Since he does not actually present the evidence and indicate his weighting of sources, the results can best be put down as the suggestions of a competent authority in the field, familiar with literature and practice. To attempt to dignify them with the prestige of being scientifically established either directly or by implication is too much, as the author himself recognizes. There is a helpful summary of important points at the end of each chapter.

For those who wish the direct contact method there is given at the end of each chapter an extensive annotated bibliography. The author suggests the term "abstract" for his comments but a two or three line comment cannot be considered an abstract. It does serve the very useful purpose of giving a clue to the content of the article. Instructors who wish to have their students use experimental studies will find these bibliographies helpful.

The volume gives most space to reading and arithmetic, with single chapters for spelling and writing.

RALPH B. SPENCE

Teachers College, Columbia University

GOW, CHARLES R. *Foundations for Human Engineering.* New York: Macmillan, 1930. Pp. xiii+226.

This book represents the first third of the course in Humanics offered by the author in the Massachusetts Institute of Technology. The conceiver and donor of that course, William E. Nickerson, sounds the keynote in a prefatory discourse on wisdom versus knowledge. Knowledge is learning, erudition, encyclopedic amassment of lore, whereas wisdom is judgment or ability to use knowledge. Both are essential but 'every other quality is subordinate and inferior to wisdom.' Colleges and scientific schools accumulate and impart stores of knowledge; that young men should issue forth crammed

with little else is most unfortunate. For success in life depends upon wisdom in handling human problems. The aim of the book, or the course, is to help the student toward success along his chosen line of work by study of his own traits and his relations with other people.

Most of the pages are occupied with an interestingly concrete survey of the cardinal qualities of human nature commonly conceded as making for success or failure. Honesty is the first requirement and loyalty to those below as well as above, comes next. Courtesy and tact are particularly necessary when the two parties concerned have diametrically opposed interests as is often true in case of contractors and inspectors. Friendliness usually pays. "Because someone cordially dislikes you is no reason why you should reciprocate the feeling." Ability in observation requires interest for its development; those who perceive searchingly are continually educating themselves and tend to move upward the faster. Judgment is the basis for action while initiative is a self-starter. 'If youth only knew and age only could.' Putting it across is a matter of perseverance; people do not die of sheer hard work. Efficiency on the job is insufficient; contacts with other people must be satisfactory. 'He who gives himself airs of importance exhibits the credentials of impotence.' 'Nature has given us two ears but only one mouth.' Don't be "an ambitious noise in a barren desert." Analyze your problems to the bottom. 'Errors, like straws, upon the surface flow; he who would search for pearls must dive below.' These random lines may give an idea of the level of the book but the critical reader must turn to the pages to verify the excellence of the writing. The student will get there a feeling that in the ascent of the mythical ladder "Æsop's Fables are worth taking to heart."

A chapter on personality as "the integral of the many traits which go to make up a man,' and a brief chapter on the principles of speaking and writing utilize or assemble much of what has gone before.

Those who attain any considerable altitude upon the ladder of success are necessarily leaders of others. The inference is that the qualities of success are also the qualities of leadership, at least in the business and engineering field to which the author refers. 'Leadership is that combination of qualities by the possession of which one is able to get something done by others, chiefly because, through his influence, the others become willing to do it.'

Replete with commonsense precepts and thickly studded with illustrations from the lives of successful and unsuccessful men, the fourteen chapters should not only have practical value for the earnest young man about to go to work but also serve as confirming

reminders to many older workers who may know already everything that the book contains.

Following the culminating chapter on leadership, there is what the reviewer considers to be a peculiarly fitting final section, a survey section consisting of many practical questions and answers, based on and classified according to the chapters. The answers are usually much longer than the questions. "Does loyalty to an employer make it impossible to use common sense?" "Can you be loyal and dishonest?" "Should an employee keep quiet about underhanded business methods?" "How does a man know sound judgment when he meets it?" "Should a leader admit making a mistake?" "Is not happiness the real success?" The professional psychologist could not answer all these questions but the book was not written for the professional psychologist.

It was written as a guide to wisdom for the young adventurer, and such it is. Based largely on age-old common sense, it contains many principles which have stood the test of time; and however much one may question the validity of common sense he is unlikely to disparage the severity of that test.

What of the other two-thirds of the Humanics course not represented in the book? While one feels that they might have contributed to its practical purpose, it is a psychological naïveté running through the written pages that one questions more. The climber (of the ladder) is adjured to begin forming the habit of judging himself and others correctly that he may at length do so automatically and instinctively. A kind of psychographic chart is cited and described for use in this connection. Along one dimension are the terms, creative, productive, receptive, defective, perversive, destructive; and along the other dimension are physique, work, property, enjoyment, knowledge, art, family, society, state, morals. In the appraisal of himself and others, the young man is told that he will encounter different types of mind—rebellious, egotistical, dogmatic, partisan, suspicious, argumentative, grasshopper!

A degree or two of looseness in the use of psychological terms is justified where there is no use in bothering the youthful reader with a lot of distracting technicality. There is no use in discouraging him by overemphasizing the difficulty of his task. But some conception of the difficulty is essential to a proper attack. That conception is not given, for the naïve reader is left with the naïve views laid down. He feels that individuals can be grouped according to discrete types of mind; he feels that a rating scale is a satisfactory device for character analysis and that the subjective qualities of human nature are

at present quite definable and measurable. About the only precaution given him in the task of appraisal is to gauge the individual by his "general average makeup" rather than by one or two prominent traits.

In brief, the young reader is left with much to learn about the appraisal of character traits, and this is partly because no one can now tell him. He can learn much, on the other hand, concerning the general importance and pragmatics of qualities favoring success.

SIDNEY M. NEWHALL

Yale University

LUCAS, D. B., and BENSON, C. E. *Psychology for Advertisers.* New York and London: Harper and Brothers, 1930. Pp. xv+351.

This book starts with the view that "the ultimate purpose of all advertising is to aid in making sales" and then restricts itself closely to the psychological as distinguished from the economical aspect of the problem. Stimuli, responses, and human tendencies conditioning inclination to purchase are considered, while markets, buying power, and profitableness of advertising are not.

Five of the six parts, containing several chapters each, are devoted respectively to what the authors regard as the five aims of psychology in advertising. The first aim is to understand the customer's reactions and this is approached by study of native and other tendencies, attention, interest, association, and by what is unusual in advertising works—a chapter on physiological and sensory psychology. The second aim is adequate design of appeals. This part includes types of appeal, evaluations of appeals, and how appeals lead buyers into action. The authors state that they have made extensive studies of the relative effectiveness of positive and negative motives. "Contrary to tradition it was found that adult readers do not react more strongly to positive attainment motives than to negative avoidance motives."

Part three is concerned with the "mechanics" of laying out advertisements and deals with size, headlines, illustration, legibility, color, type-faces, and so on in conventional manner. Part four treats of advertising mediums, selection of, types and functions of. One chapter is devoted to the salesman as an adjustive, flexible medium. His effectiveness can be measured better than that of the usual inorganic mediums.

The last aim is to be able to measure the effectiveness of advertising copy. The authors lament "the lack of reliable, scientific tests

of actual advertising effectiveness." Their treatment of this problem is in general admirably cautious and conservative though the reviewer believes that they have definitely under-rated the value of one method of measurement.

This important section starts off with instructions for calculating common statistical measures of central tendency, deviation, and correlation, using illustrations from advertising studies. Graphic methods of exhibiting data are mentioned. Field methods of measuring advertising effectiveness are discussed from the standpoint of value as well as of technique. Such methods can be used only 'after' the advertisements have been released. Historical trends or persistence of business practices and commodity-brand association tests for familiarity, both give indications of "much value." Though slow, expensive, and subject to other disadvantages, the carefully conceived and well controlled test campaign is regarded as the best procedure for measuring advertising effectiveness at present. This unwieldy procedure is being used increasingly, partly one might surmise, because it appears so reasonable to the business man.

The laboratory methods have the advantage of being applicable 'before' the advertising is distributed. Tests of attention, interest, and memory, are critically discussed. The order of merit method of evaluation is regarded about the weakest of all procedures, field or laboratory, for gauging advertising effectiveness. Studies by several experts and a recent experimental study by the reviewer seem to indicate, however, that this method is reliable and valid to a very useful degree. A limitation of most laboratory methods is that they give such specific results that evaluation of an advertisement as a whole requires combined use of a number of them. The order of merit method may be used in estimating certain specific factors as well as in estimating the appeal of the advertisement as a whole.

A sixth part called "Advertising and the Public" deals in a general way with such topics as individual and group differences, the educational function of advertising, truth, and ethics in advertising, and the justification of the progressive expansion of advertising practices.

The book is of orthodox pattern. And, as the reader turns its pages, he feels increasingly certain that the authors must indeed have drawn heavily on the content of the earlier works of such writers as Hollingworth, Poffenberger, and Scott. The task was largely one of selection and what was selected is good. Much good was not selected; there is surprisingly little actual data from specific studies. Radio is barely mentioned but then the work was deliberately confined

to that most investigated medium, the magazine. The task was difficult; intelligent brevity is an achievement in the face of such a wealth of material. The result is an elementary text-book of methods and principles, not a source-book of data or an advertisers' manual. The title might better have been Psychology for Advertising Students.

One fails to find any considerable contribution to the subject of psychology in advertising but he is left with something more than the belief that he has read "another book." With its wholesome conservatism and careful selection of materials, so desirable in the face of "crumbling traditions"; and with its systematic brevity of treatment, this text should play an important part in advertising courses.

S. M. NEWHALL

Yale University

WEBB, E. T., and MORGAN, J. J. B. *Strategy in Handling People.* Chicago: Boulton, Pierce and Co., 1930. Pp. 260.

Capability in handling a person depends upon sufficient appraisal of his characteristics to allow of the selection of appropriate devices for dealing with him, and upon proficiency in using those devices. The fact that people are qualitatively similar in many respects makes possible the formulation of certain strategies for handling them. The authors liken the strategist to a salesman, for he tries to secure results by appealing to various wants in various ways.

You can be a strategist by appealing to people's wants in order to make them like you, to interest and convince them, to get their coöperation, to make them say 'yes,' to trade pennies for dollars, to put your ideas across, to develop good-will, to build your reputation, or to develop your personality! The book contains individual chapters on these and other problems of the influencer. Surveying the book as a whole, one feels that the most effective class of devices is the 'ego uplifters'; the means by which the strategist makes the individual 'feel good' or creates a generally favorable attitude in him. One way to do this is to ask the 'subject' to do small favors for you, things that he likes to do, things that touch upon his interests or special abilities; for this makes him feel relatively superior. Another way is to show respect for the individual's customs, interests, possessions, views, friends, needs, hobbies, and so on. With strangers particularly, it may be desirable to post yourself in advance concerning the individual's characteristics and attainments. Then

you will not only be able to show him consideration more effectively but also be more likely to achieve whatever else you are after.

The authors have written soundly as well as popularly. Though they appeal primarily to the general reader since they are concerned almost exclusively with concrete problems of everyday life, they also appeal to the psychologist by presenting so many authenticated cases of application of psychological principles. The main problem of influencing others is intrinsically interesting to both groups because it is important both practically and theoretically.

The method of presentation employed was approved by a large number of psychologists interrogated. It consists in setting forth dramatic scenes from the lives of actual characters and in pointing out the psychological moral of the success or failure in each case. The cases are coherently grouped according to chapters and each chapter concludes with a summary of italicized recommendations based on the cases. Photographic illustrations of many famous men augment the appeal of this unusually concrete work. More than being widely readable, it is the outstanding work in its field. Still, there are certain things that may be commented upon.

Of the some 280 names of persons, not all well known, appearing in the index, only four are those of women. Two of these, Louisa M. Alcott and Lady Astor, do not happen to be successful strategists in the cited scenes but rather victims of strategy. Evangeline Booth and Mme. Récamier, on the other hand, come out on top. Rather a pity that more cases were not marshalled from among the better known representatives of this sex, particularly in view of the popular belief regarding its adroitness in human strategies.

The case method is essentially sound but it has its dangers and they are not all statistical dangers. A likely source of error here would seem to be rationalization. It is said, for instance, that "one simple precaution largely explains" the success of one famous individual. He "merely takes the trouble to show people that he understands their point of view." The individual himself, not to mention others, might well have mistakenly assumed this precaution to be the major cause of his success. Again, the reviewer finds it difficult to believe that some of the allegedly successful devices are deliberately used as strategies by the truly great. Who believes that Lincoln's modesty was a deliberate 'modesty' for effect? There is a vast difference between doing something deliberately and doing it spontaneously. A spontaneous expression or genuine indication of what is going on within may very well be convincing whereas a deliberately simulated expression may not. Professional actors often fail in

verisimilitude and one would expect most persons to be less successful. There is this danger of reading an ulterior intent into devices that have proved successful only because they have been spontaneous. The device may fail to work when attempted voluntarily.

Strategies are essentially devices for gaining an advantage over someone else. Whether or not the strategist is selfish in using the strategy depends, evidently, upon his real reason for using it. The authors state that the way to develop personal charm is by building up a genuine interest in other people. This suggests the desirable possibility of using strategy unselfishly and that is a theme that could have stood a good deal of emphasis, even though logically its development might fall outside the scope of the present book.

The strategy question might have been viewed carefully from legal and ethical sides. The use of supposedly spontaneous effects for ulterior ends often suggests an underhandedness or deception which is not pleasant to contemplate even when the motive is really an altruistic one. To what extent and under what circumstances is a concealed ulterior motive legitimate in influencing others? At times one feels that reversion to primitive methods of physical combat is the infinitely more honorable and courageous way of trying to get what one wants. Modern civilization is already shot through with more or less contemptible strategies, and one requires "a *nice* judgment to draw the line between legitimate shrewdness and mere trickery." (Reviewer's italics.)

As long as man remains such there remain his wants and consequently a basis for appeals of strategy. With the passage of time, however, specific devices gradually lose their effectiveness partly because people get adapted to them and partly because people 'get onto' them. The strategist has the task of keeping ahead of the general public or the particular individuals that he may wish to influence; the strategist must invent more and more new ways of doing the old thing, or else use the old ways irregularly. When bargaining with sophisticated individuals the second-hand dealer may find that his expression of indifference has become a sign that he wishes to get rid of the merchandise; he may find that his enthusiasm about it no longer works with the naïve. Then he must reverse his strategy if he would continue to outwit his customers. Very little concern is shown for this necessity of keeping ahead.

Perhaps the problem of detecting sincerity is becoming increasingly difficult unless, strategically, we are all advancing at the same rate. Certainly, we sometimes feel obliged to study the question: Is this individual really trying to achieve what he gives the appearance

of trying to achieve? Confusion on the question of sincerity is not uncommon; if the confusion were increasing it would not be unreasonable to suspect progressive undermining of confidence in human nature. One would not mind so much in the case of strangers but would one's strategic friends have to become strangers!

Increasing publication of popular works on strategy would seem to have a selfish value for the essentially selfish, to have a protective value for the relatively naïve helping them to compete more nearly at par, and to place in the hands of the altruistic a tool for common good. Conceivably and socially, it may be well that the particular field of this unique book is not crowded at present.

S. M. NEWHALL

Yale University

DE GRAMONT-LESPARRE, A. *Essai Sur Le Sentiment Esthétique,* 1921. Paris: Felix Alcan. Pp. 298.

DELACROIX, HENRI. *Psychologie de L'Art.* Paris: Felix Alcan, 1927. Pp. 481.

OZENFANT *and* JEANNERET. *La Peinture Moderne.* Paris: G. Cres & Cie, 1927. Pp. v+172.

BOURGUES, LUCIEN, et DÉNÉRÉAZ, ALEXANDRE. *La Musique et La Vie Intérieure (Essai d'une histoire psychologique de l'art musical).* Paris: Felix Alcan, 1921. Pp. 586.

SÉAILLES, G. *L'Origine Et Les Destinées De L'Art.* Paris: Felix Alcan, 1925. Pp. 158.

SÉAILLES, G. *Essai Sur Le Génie Dans L'Art.* Paris: Felix Alcan, 1923. Pp. 313.

De Gramont-Lesparre defends the intellectualistic theory of beauty against the doctrines of sympathy, mystical intuitionism and hedonism. The pure esthetic response rarely occurs. It is most often intermixed with non-esthetic ingredients. The esthetic response is purely intellectual, an intimate communication between two minds, involving rational thought. It is not organic, but cerebral. Nor does the esthetic experience depend upon the subject matter or the predominant idea of an art work. It is the apprehension of an order in perfect accord with the laws of mind and matter, whether derived from art or nature. It is a communication of one intelligence with another, through a medium within our comprehension, the sympathetic participation of the observer in the purpose, effort, and realization of a creative mind.

Delacroix' book is a conglomeration of the writings of other

estheticians, playing a sort of intellectual hide-and-seek game with the reader, daring him to discover the author's own point of view.

Esthetic pleasure is a synthesis of sensory pleasures. Sensation is the beginning of all art. Agreeable stimulation of the sensory organs is the *sine qua non* of all beauty. But the sensations must be ordered, since the construction and perception of form is the basic law of art. The ordered sensations must symbolize a mental state. Thus musical pleasure harmonizes sensory and sensori-motor pleasures of sounds and movements, while poetry is the musical expression of an idea. The esthetic experience is thus a state of equilibrium, a harmonious play of our faculties. Esthetic pleasure is therefore sensori-motor. But this does not mean that a pleasurable sensation is *ipso facto* an experience of beauty. The sensation of beauty has a unique construction. It exists only in the realm of beauty. Thus, a musical tone combines with other tones into a musical form because there is a certain mathematical relationship between the tones. Each art has some sort of mathematical foundation.

Esthetic experience is accompanied by a variety of organic modifications like those that occur in emotion. But there is nothing typically esthetic in these organic reactions. They are but the moment of realization of esthetic feeling, but not the esthetic feeling *per se*. Esthetic feeling is broader and vaster in structure than organic process. Organic process is an aspect of esthetic experience, as it is of all emotional experience, but is not the experience *in toto*. The esthetic response is more than an aggregate of organic sensations.

The art work tells us that genius is the power to order mental impressions and to give them material form. The artist does not get engulfed in the turbulent stream of imagery, he controls it. The image, which is the point of departure for the art work, shapes itself as the artist works, as he gives expression to it. The painter who has only great ideas is a poor painter, the test of his inspiration being its concrete expression through the material of his art. The poet's ideas are born as they are verbalized. The painter gets to see as he draws. The novelist gets to know a character as he describes him. The composer evolves a new melody in the process of playing with sounds. No artistic theme is conceived at once in all its details. The process of execution, of elaboration, however, may proceed mentally, but it is always a doing of something, whether muscular or mental.

Ozenfant and Jeanneret discuss the psychological basis of modern painting. Nature moves us esthetically only when sheer accident presents her to us in some exceptional order. The purpose of art is to remove this hazard and to afford us permanently effective esthetic

forms. Nature becomes beautiful only through art, and whenever any aspect of nature appears to us as beautiful by chance that aspect of it has become a work of art. Thus all beauty is created. The esthetic system of the ages have arisen from the problem as to the rôle of nature in art, and to-day the great debate is whether painting is an imitation of nature, or nature seen through a temperament, or pure creation, that is, forms and colors assembled into a certain order.

The authors contend that the advent of the machine has inaugurated an epoch when a geometric view of the world has become supreme in our visual experience. Our need or art has therefore been modified, and painting must take cognizance of the new need. The modern painters, from Ingres to the Cubists, are the heralds of the new age of lyricism in painting, when the painter has become the poet of pure color and form. Painting prior to the modern movement was subservient to the priest, magistrate, schoolmaster, prince and general. This didactic function of painting has been displaced by photography and printing, so that the painter of to-day finds himself in the ranks of the pure poet, his only goal and objective being to satisfy the need for lyricism in life. Machinery has emancipated him from his former servitude.

Bourgues and Dénéréaz present us with a physiological interpretation of the history of music. Every sensation has a dynamogenic effect on the organism. The effect is twofold: kinesthetic and coenesthetic. The dynamogenic factors of music are pitch, intensity, timbre and duration. A musical composition arouses in the listener a general dynamogenic rhythm, every instant of which consists of the sum total of the dynamogenics of pitch, intensity, etc. A piece of music is thus a series of motive events, consciously interpreted as a series of emotional states, alternating between joy and sadness, but always pleasant. It follows that the greatest composer is the one who arouses the widest range of dynamogenic effects without causing exhaustion in the listener.

Coenthesis is the basis of these motive events and psychic states. The corresponding kinesthesis is inhibited due to custom but carried out by children and savages. These inhibited overt reactions are the more felt, however, as conscious emotion.

The dynamogenic effects of music are more pronounced than are those of the other arts, because music acts directly and immediately on the senory organs. It does not require the medium of intelligence, that is, ideas or concepts.

Music can not express ideas or images, since it is only his own dynamogenic rhythms that the composer can convey through the

medium of sound. The mental state of the auditor can only fortuitously correspond to that of the composer. Music is therefore more effective emotionally than the other arts, but less effective ideationally.

The authors further give a dynamogenic interpretation of the oriental and occidental music systems, or the evolution of harmony, and dynamogenic formulas for the great composers.

Séailles attacks Guyeau's theory of the identity of the useful and the beautiful. How can ordinary experience render, he asks, that which comes into existence only through the mind of the artist? Guyeau's reasoning is faulty. He concludes that because a useful act is beautiful therefore the beautiful is also the useful; because a sensation is an element of esthetic pleasure therefore sensation is beautiful; and since beautiful sentiments are sentiments that are useful in the development of the life of the individual and the species, therefore the beautiful and the good are identical. But just because the beautiful is met with the useful and the good, and could not exist without the agreeable, it does not therefore follow that it is to be identified with the useful and the good. Such reasoning omits the very characteristics of beauty, those which distinguish and specify it. A man at work is beautiful, but what is beautiful in work is not the work itself, that is, its useful results, but its form and what it expresses, the hardiness and power of the courageous and strong man, visible in contracted muscle, panting chest, trembling of the body, the entire system breathing energy and will.

There are no beautiful sentiments *per se,* since non-corporate beauty, simple, absolutely pure beauty, *sans* form and invisible, exists only in the Platonic dialogue. But there are esthetic sentiments, or those that can express themselves only in rich, harmonious form. Certain good sentiments are not esthetic because they are too simple, modest, common, expressing themselves through actions that have no *éclat*. The poor form of an honest and mediocre life does not tempt the artist. Shakespeare prefers Macbeth, and Racine Nero. Passion is poetic because it is impetuous. The esthetic value of a sentiment is not measured by a moral standard, but by the richness and harmony of a mass of images which it organizes.

If the beautiful were the useful, agreeable and good, art would not exist, for there would be no reason for its being. The nature of art is therefore to be determined by defining the need which gives birth to it. Man's natural urge is to live fully. All his tendencies are forms of this elemental drive, all his acts express it, but beauty alone appeases it. Thus beauty gives him what he seeks: life complete. Art is not born of joy but of sorrow, like hope. If we lived in an

earthly paradise, if our noblest sentiments found expression in a world of justice and love, there would be no opposition between the real and the ideal, and art would disappear. The principle of art is the insufficiency of the existent, the anxiety of the soul for a richer life. Man is thus tempted to create, in opposition to the large world, a small universe interpenetrated with humanity—the contemplation of which charms and consoles him. The primordial urge, the love of life, expresses itself in us by the relentless effort to organize our sensations, sentiments, ideas, and acts. Man seeks to create for himself what nature denies him. Thus we are not masters of our sensations: they impose themselves upon us. Our dreams are none of nature's concern. But sensation survives in the mind as image. An image remains a sensation, but it is an inner subjective element. Every significant sentiment envelopes itself in a mass of images which are organized for expression. Such images become sensations, since we tend to execute them in movements. Here lies the basis of art. We love the image because it is sufficiently light and pliable to follow all the shades of sentiment, to give sentiment body and solidity. And if we desire to turn image into sensation, thus giving the image reality, it is because idea thereby becomes fact, and we thus create an illusion of a sympathetic world, of nature suffused with spirituality. Art is thus an aspect of the instinct of self-preservation. It is not a product of reflection, but an expression of the will to live. Art creates an artificial world, born of sentiment, in which man can live *sans* struggle and *sans* obstacle.

The destiny of art is determined by its function. Here Séailles attacks the doctrines of Taine, Renan, and others who hold that science and democracy mark the death knell of art. Science reduces the world to a system of generalizations. But man is not entirely a creature of pure intelligence. He is a complex being, body and mind, sensation, idea, and sentiment. Science cannot satisfy the total man, does not give him life complete. Science is cold, detached, art is human. To the abstract, mechanical world of science, man will more and more oppose a human world. Sentiment will increasingly create an appearance that gives it expression, create through beauty an illusion of a sympathetic nature. Driven from the world by science, man will reënter it through art and poetry.

Séailles' latest work is an elaboration of the thesis outlined above. He approaches the problem of the nature of art through genius. In the widest sense of the term, genius means mental fecundity, the power to organize ideas, images or symbols spontaneously, without resorting to discursive, conscious reasoning. Mind creates its world. From the plurality of impressions mind forms a unity of sensation,

from plurality of sensation a unit object, from the plurality of objects in space it forms the visible world, and all this without the intervention of reflective consciousness. But mind is not satisfied with this external harmony, it must discover its hidden causes, and it seeks the reasons in relationships that unite things, in the general laws which summarize and explain particular facts. From such general laws it evolves universal principles which embrace the totality of being, and it seeks to understand itself and its actions in the harmonious universe which it created in order to create itself. It may therefore be said that mind, in working to create harmony, in having for the very condition of its existence the organization of the world and its ideas, works to create beauty in struggling for life. Science and art are both forms of life, having the same origin; namely, the spontaneous tendencies of mind, the laws of its being and activity.

Mind works spontaneously, without effort, forming its world from sensory data. But this superficial knowledge yields but a fragmentary, hazardous existence, with unity only apparent, and multiplicity real and definite. In sensation objects are but of an instant, changing and dispersed. Mind cannot be satisfied with superficial sensory experience which only yields appearances. Spontaneously it tends to organize its ideas, hence its world, since the stuff of reality is idea. It grasps certain relationships in the events of a moment's duration, it discerns their common, permanent characteristics, it classifies them, it formulates laws which give a continuity to successive events, forming unity out of the variety of space and time. It seeks the master idea which coördinates all other ideas into a single final unity. This natural process of mind finds its highest expression in genius. Genius strives toward order and life, creating itself as it creates the world, itself becoming real only as it gives reality to the objects of its thought, and becoming master of itself only in gaining mastery over things. Life reduced to sensation is a confused dream phantom. It has no reality. Mind organizes itself in organizing the world of objects. It becomes real as its world assumes reality. Thus mind works for order, it lives only by introducing beauty into the world of objective phenomena.

But by what means does mind order the universe? By what means does art oppose nature? The answer is that in mind there is a docile, plastic material which, while representing the world, is of the substance of mind itself and does not resist its laws. That material is the image. All sensation has a corresponding image. Sensations force themselves upon us, but images are under our control. The image is also the common stuff of mind and matter, it is both thought and nature. In the image mind and matter are united.

An image can provoke, initiate a movement whether incipient or overt. To image a movement is to carry it out. To image sorrow is to experience it. That is, the imaged act tends toward completion, and the longer the image persists the stronger does the impulse for action become. Thus the image, coming from the outside world, returns to it by creating another sensation. Here is the genesis of art: the image which appears spontaneously and expresses itself in appropriate acts. In the image there lives the hope of a future world to which genius will give birth. In the relationship of image to mind and movement lies the germ of art.

MAX SCHOEN
Carnegie Institute of Technology

NOTES AND NEWS

THE following new staff appointments, beginning September 15, 1932, are announced by Dr. Norman Fenton, Director of the California Bureau of Juvenile Research: Dr. Ruth E. Jaeger, psychiatrist; Miss Margaret Ross Noonan, psychiatric social worker; Mrs. Nan M. Allan, clinical psychologist, Pacific Colony; Miss Amytis Richey, clinical psychologist, Patton State Hospital; Miss Julia Spight, clinical psychologist, Agnews State Hospital; Mr. Alban G. Davies, clinical psychologist, Stockton State Hospital. In addition to these personnel, the following psychiatrists and psychiatric social workers will give part-time service to the Bureau of Juvenile Research, beginning October 1, 1932: Dr. E. W. Mullen and Mrs. Florence Glenn, Agnews State Hospital; Dr. Harry S. Blossom and Mrs. Golda Brinker, Patton State Hospital; Dr. Fred J. Conzelmann and Mrs. M. L. Hildreth, Stockton State Hospital; Dr. T. W. Hagerty and Mrs. Claire Nordstrom, Pacific Colony.

ACCORDING to *Science,* Dr. Walter B. Cannon, George Higginson professor of physiology at the Harvard Medical School, has been elected an honorary member of the Barcelona Academy of Medicine.

PROFESSOR JUNE E. DOWNEY, Professor of Psychology and Philosophy at the University of Wyoming, died in Trenton, New Jersey, on Tuesday, October 11, 1932.

THE Annual Report of the Social Science Research Council is available upon request. (230 Park Avenue, New York City.)

DR. C. MACFIE CAMPBELL, professor of psychiatry at the Harvard Medical School, will give, at a date to be announced, six evening Lowell Lectures on "Human Personality and the Environment."

ACCORDING to *Science,* Lord Macmillan has agreed to succeed Lord D'Abernon as president of the National Institute of Industrial Psychology, London.

BOOKS RECEIVED

BRUNO PETERMANN, *The Gestalt Theory and the Problem of Configuration.* New York: Harcourt, Brace and Company, 1932. Pp. xi+344.

WALTER BLUMENFELD, *Sinn und Unsinn.* München: Verlag von Ernst Reinhardt, 1933. Pp. 110.

WILLARD L. VALENTINE, *A Psychology Laboratory Manual.* New York: Prentice-Hall, Inc., 1932. Pp. vi+285.

W. BURRIDGE, *A New Physiology of Sensation.* London: Oxford University Press, 1932. Pp. 70.

EDWIN R. EMBREE, *Prospecting for Heaven.* New York: The Viking Press, 1932. Pp. 185.

EULA PEARL EGAN, *The Effect of Fore-Exercises on Test Reliability.* Nashville: George Peabody College for Teachers, 1932. Pp. 37.

HORACE M. KALLEN, *College Prolongs Infancy.* New York: The John Day Co., 1932. Pp. 28.

HERMANN NUNBERG, *Allgemeine Neurosenlehre auf psychoanalytischer Grundlage.* Berlin: Hans Huber, 1932. Pp. viii+339.

FELIX KRUEGER and FRIEDRICH SANDER, *Gestalt und Sinn.* München: C. H. Beck'sche Verlagsbuchhandlung, 1932. Pp. 93.

HARALD SCHJELDERUP and KRISTIAN SCHJELDERUP, *Über drei Haupttypen der religiösen Erlebnisformen und ihre psychologische Grundlage.* Berlin: Walter de Gruyter & Co., 1932. Pp. 108.

HERBERT GRAEWE, *Untersuchung der Entwicklung des Zeichnens.* Germany: Pädagogischer Verlag von Hermann Schroedel, 1932. Pp. 180.

HAVEN EMERSON, *Editor, Alcohol and Man.* New York: The Macmillan Company, 1932. Pp. xi+451.

PAUL BOUTS and CAMILLE BOUTS, *La Psychognomie. Lecture Méthodique et Pratique Du Caractère et Des Aptitudes.* Paris: Librairie Félix Alcan, 1932. Pp. xv+131.

MILTON METFESSEL, *Student's Guide for Demonstrations of Psychological Experiments.* New York: McGraw-Hill Book Company, 1932. Pp. xi+175.

DR. HELENE DEUTSCH, *Psycho-Analysis of the Neuroses.* London: The Hogarth Press, 1932. Pp. 237.

DR. F. ACHILLE-DELMAS, *Psychologie Pathologique du Suicide.* Paris: Librairie Félix Alcan, 1932. Pp. xi+237.

PAUL REED MORROW and WILLARD ORAL MISHOFF, *A Guide to Thesis Writing.* Georgia: McGregor Company, 1932. Pp. iv+16.

EDWARD S. ROBINSON, *Man As Psychology Sees Him.* New York: Macmillan Co., 1932. Pp. 376.